NIASA & SOME OF THE ACTIVITIES OF THE INDUSTRY ASSOCIATION

Eastern Cape, May, 2016
Content

1. Nuclear industry background & new build program
2. Career opportunities
3. Potential employers
4. Conclusion
NIASA Mission and Vision

Nuclear Industry Association of South Africa, formed in 2007….

Mission: To represent the Nuclear Industry in South Africa and to support, promote and champion the collective interests of its members and the country.

Vision: To have a local nuclear industry that has increased local content and that is globally competitive.
NIASA Goals

1. To act as a public voice for the nuclear industry.

2. To actively promote the maximum local industrialisation and economic clustering of nuclear manufacturing in South Africa.

3. To promote skills development, job creation and Black Economic Empowerment through the nuclear industry in South Africa.

4. To promote excellence and a culture of safety and security within the nuclear industry.

5. To facilitate coherence and to avoid duplication of effort in the development and expansion of the nuclear industry.
NIASA Goals (cont’d)

6. To present a common face and purpose to Government on shared values and concerns.

7. To promote public understanding of nuclear technology.

8. To act as a sounding board to Government on policy formulation.

9. To promote a common approach to research and related scientific issues and the role of universities.

10. To facilitate the solution of problems or obstacles faced by the industry.
Technological Options

- Gas turbines
- Efficiency
- Renewables
- Nuclear
- Transmission

- Coal
IRP 2010 OUTCOME

Policy-Adjusted IRP

Total additional new capacity until 2030, in GW

- Coal: 6.3 GW
- Nuclear: 9.6 GW
- Hydro: 2.6 GW
- Gas - CCGT: 2.4 GW
- Peak - OCGT: 3.9 GW
- Renewables: 17.8 GW

Solar PV: 8.4 GW
CSP: 1.0 GW
Wind: 8.4 GW
Net new generation capacity- (IRP2010)
Some industry developments - Potential Nuclear Sites
CAREER OPPORTUNITIES
TYPES OF CAREERS IN NUCLEAR
- nuclear not only for nuclear scientists & engineers

The average 1,000-megawatt nuclear power plant generates enough electricity for more than 750,000 households.
BENEFITS OF A CAREER IN NUCLEAR

A career in nuclear energy offers competitive pay, growth potential, challenging projects and a host of other benefits. The work is not always easy: Nuclear facilities are technologically complex and require a highly trained and motivated workforce. But success in this field will bring opportunities for advancement. And the pay for jobs in nuclear is well above the national average. In fact, the highest median income for any engineering discipline is nuclear.

The advantages of working in nuclear energy cover a wide range:

▷ Challenging projects
▷ Competitive pay
▷ Promotion potential
▷ Extensive training
▷ Job security
▷ Leadership roles
▷ Team focus
▷ Varied workdays
▷ Transferable skills
▷ Job mobility
▷ Social contribution
Total Skills Requirements

Skills requirements (local manufacture excluded)

Direct jobs only
TYPES OF CAREERS IN NUCLEAR
- nuclear not only for nuclear scientists & engineers

Engineers:

- Civil/structural
- Electrical
- Materials
- Mechanical
- Nuclear
- Computer
- Instrumentation and control
- Fire protection
- Systems
- Project management
TYPES OF CAREERS IN NUCLEAR
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Technicians and Skilled Trades Workers:

- Construction trades and related workers
- Electricians
- Engineering technicians
- Heavy equipment operators
- Machinists
- Maintenance technicians
- Millwrights
- Pipefitters
- Science technicians, including chemical, environmental protection, instrumentation and control, radiation protection and nuclear
- Security officers
- Welders
TYPES OF CAREERS IN NUCLEAR
- nuclear not only for nuclear scientists & engineers

Professionals:

- Accountants
- Analysts
- Business management experts
- Chemists
- Document control experts
- Health physicists (link to Health Physics Society Web site)
- Information technology experts
- Occupational safety, including radiation safety experts
- Plant operators (licensed and non-licensed)
- Statistics/probabilistic risk assessment experts
- Training specialists
# Institutions with nuclear related training

<table>
<thead>
<tr>
<th>Institution</th>
<th>Course / Program</th>
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<tbody>
<tr>
<td>University of Witwatersrand</td>
<td>PG Diploma in Radiation Protection</td>
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<tr>
<td></td>
<td>PG Diploma in Physics, Engineering and Safety of Nuclear Power Reactors</td>
</tr>
<tr>
<td></td>
<td>M Eng Mechanical Eng with Nuclear specialisation</td>
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<tr>
<td></td>
<td>MSc (Eng) Mechanical Eng with Nuclear Specialisation</td>
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<tr>
<td></td>
<td>BSc Nuclear Science &amp; Engineering (3 &amp; 2 yrs respectively)</td>
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<tr>
<td>University of Pretoria</td>
<td>PhD with thesis in Nuclear Engineering</td>
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<tr>
<td></td>
<td>M Eng with dissertation in Nuclear Engineering</td>
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<tr>
<td></td>
<td>B Eng Hons (Mech) with selection of Nuclear Eng modules</td>
</tr>
<tr>
<td></td>
<td>B Eng (Mech) /B Eng (Chem) with final year elective in nuclear engineering</td>
</tr>
<tr>
<td>North-West University</td>
<td>PhD Nuclear Engineering</td>
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<tr>
<td></td>
<td>M Eng Nuclear Engineering</td>
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<tr>
<td></td>
<td>MSc in Nuclear Engineering</td>
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<tr>
<td></td>
<td>MSc in Nuclear Eng Management – (Applied to give)</td>
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</table>
## Institutions with nuclear related training (cont’d)

<table>
<thead>
<tr>
<th>Institution</th>
<th>Course / Program</th>
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</thead>
<tbody>
<tr>
<td>University of Stellenbosch</td>
<td>MSc Eng – research thesis in nuclear industry related topic</td>
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<tr>
<td></td>
<td>BSc (Hons) in Radiation &amp; Health Physics</td>
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<tr>
<td></td>
<td>BSc (Hons) in Nuclear Physics</td>
</tr>
<tr>
<td>University of Johannesburg</td>
<td>Masters in Science and Organisation of Nuclear Energy</td>
</tr>
<tr>
<td>University of Cape Town</td>
<td>Nuclear Physics (BSc, MSc, PhD)</td>
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<tr>
<td></td>
<td>BSc Eng with nuclear power elective</td>
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</tbody>
</table>
POTENTIAL EMPLOYERS
SA nuclear industry – major facilities & location

Safari Research Reactor

2xNPPs (2MW)

Eskom

iThemba LABS

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Localization Project & Benchmarking Study

1. Development of SA nuclear industry – competitive supply chains
2. Study of industry capabilities (Worley Parsons & NIASA)
3. Identification of NPP components for localization
4. Identification of potential suppliers
5. Matching of local suppliers with NPP components and potential international partners
6. Technology & know-how transfer
7. Govt assistance to address the technology gaps (e.g. Foundry industry)
CONCLUSION
OPPORTUNITIES

1. Huge opportunity to grow SA economy and science & technology base on the back of a multi-billion Rand spend.
2. Opportunity to be part of a global effort to reduce carbon footprint.
3. Opportunity to use the uranium value chain to attract investors.
4. Opportunity to develop local high spec manufacturing which can benefit the country beyond the nuclear industry.
5. Opportunity to enhance public understanding of nuclear.
Thank You!!!

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